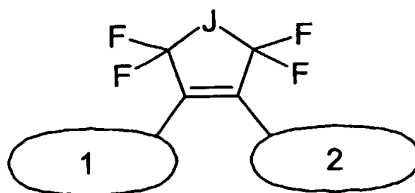
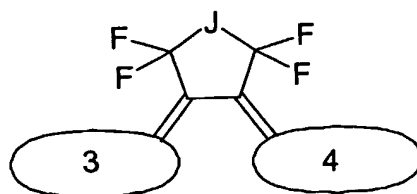


Claims

1. A material given by Formula I and Ib:



Formula I

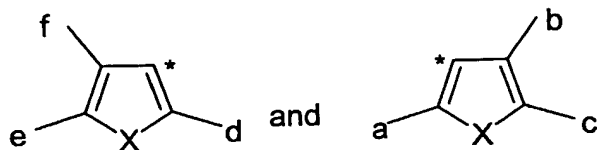


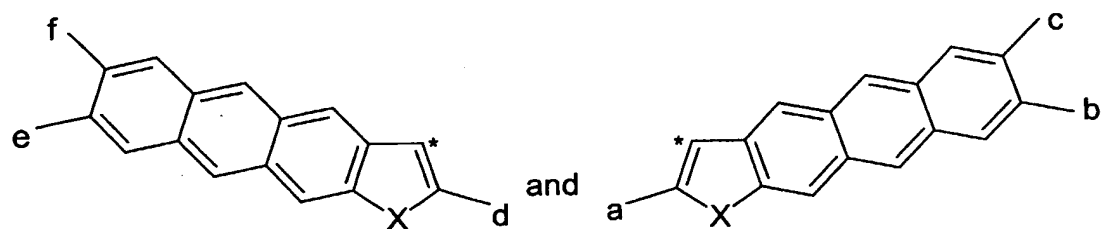
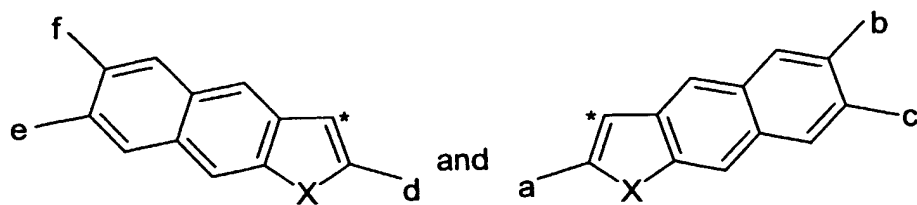
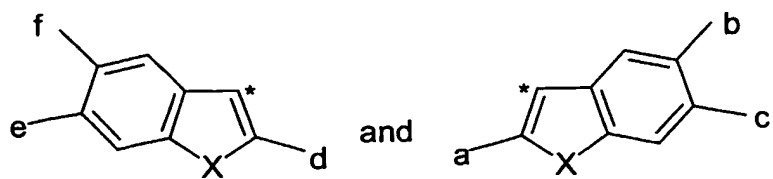
Formula Ib

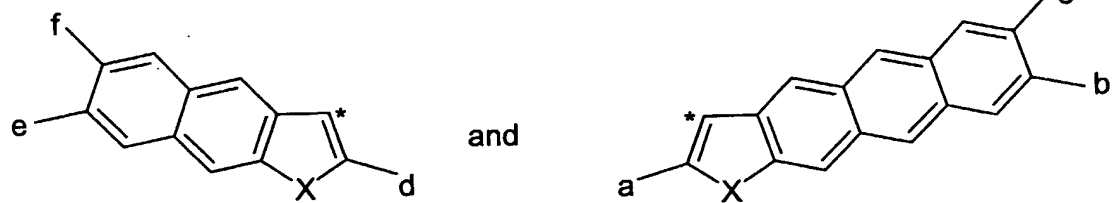
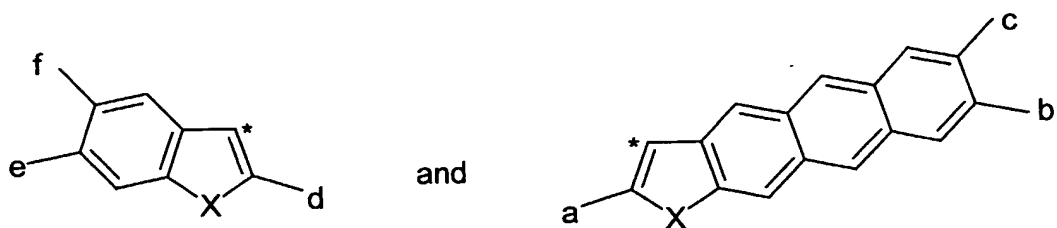
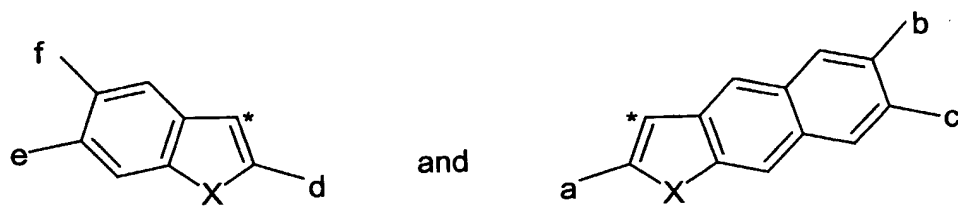
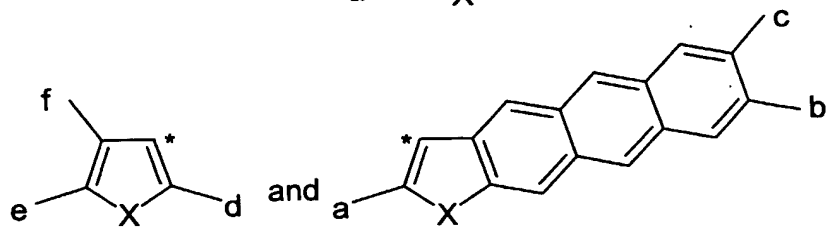
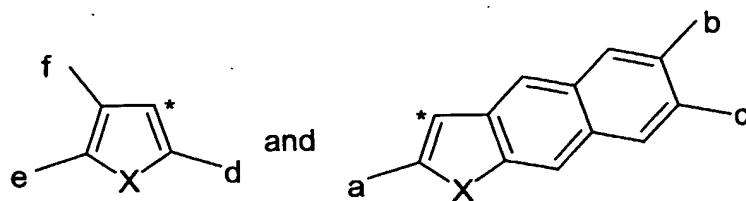
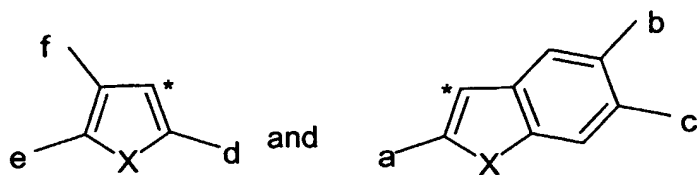
Wherein the



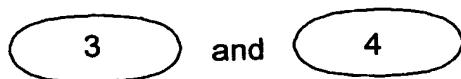
groups are chosen respectively from the following:



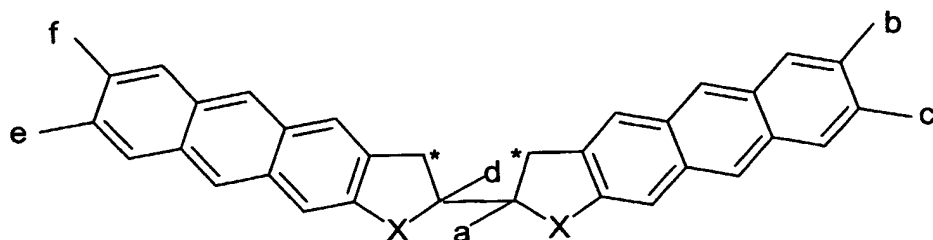
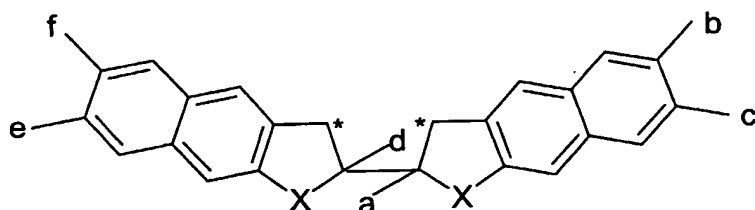
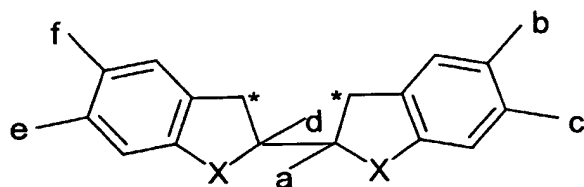
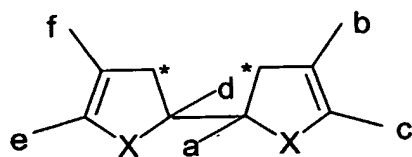


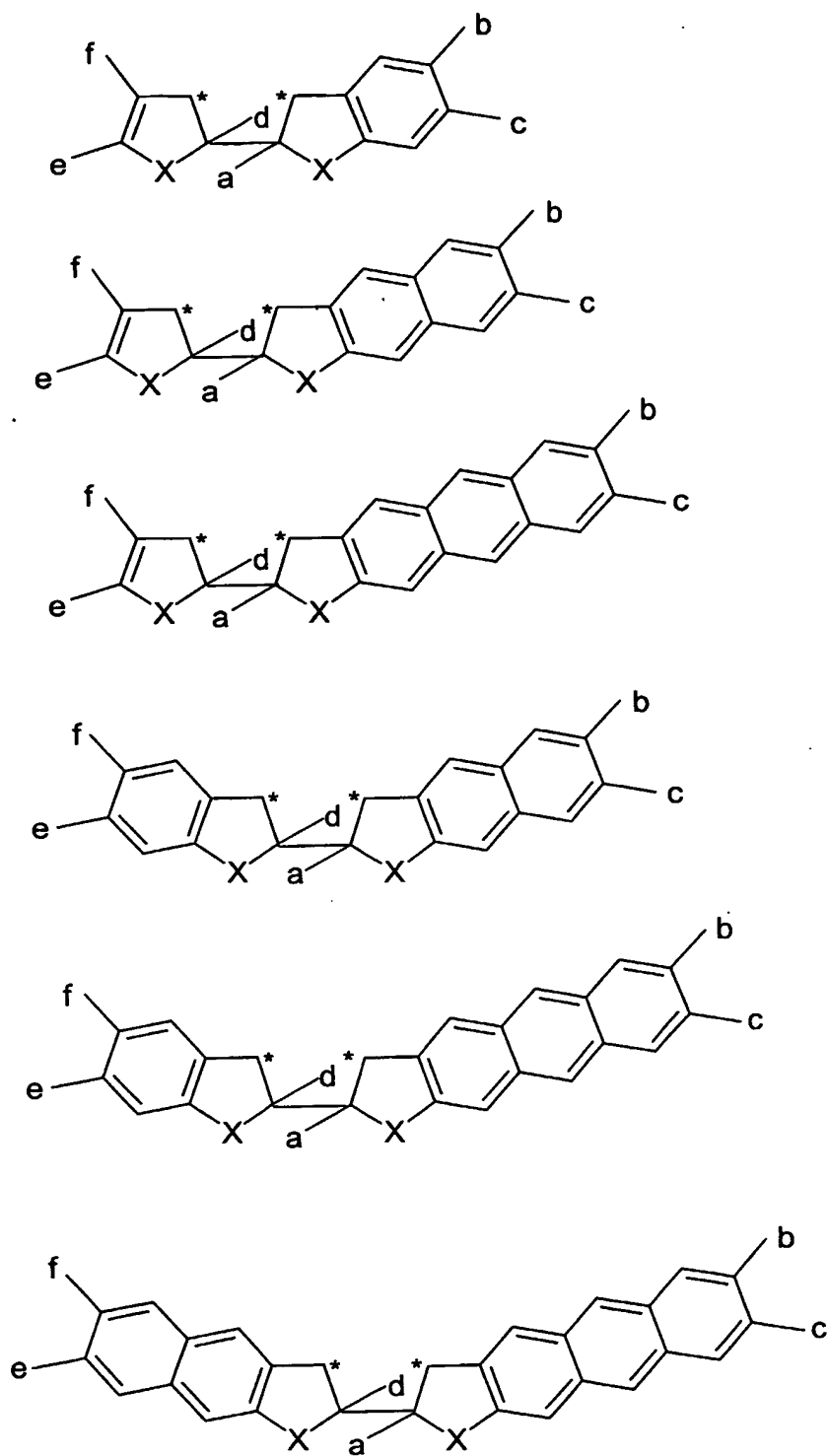


wherein



are together chosen from:





* indicates the point of attachment to Formula I or Formula Ib;
the phenyl groups in



may independently of each other be replaced by pyridine and pyrimidine groups;

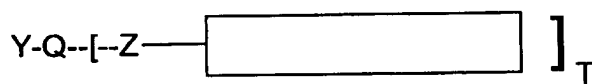
wherein X is selected from S, O, NH, Se, CH₂, P;

wherein J is selected from CF₂, CH₂, CFH, NR⁹ wherein R⁹ is selected from H, C1-40 branched or straight chain alkyl wherein one or more of the CH₂ groups may be replaced by O, CH and the terminal CH₃ group may be replaced by a CH₂ group or an SH, OH, COOH, CHO, O₂CCHCH₂ or O₂CC(CH₃) CH₂ group;

wherein a and d are independently selected from CH₃, CF₃, CH₂CH₃, OCH₃, OCH₂CH₃ or Formula II;

b, c, e and f are independently selected from H, Formula II or C1-40 branched or straight chain alkyl wherein one or more of the CH₂ groups may be replaced by O, CFH, CF₂, CH and the terminal CH₃ group may be replaced by a CH₂ group or an SH, OH, CF₃, COOH, CHO, O₂CCHCH₂ or O₂CC(CH₃) CH₂ group

wherein Formula II is given by:

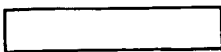


Formula II

wherein Y is selected from O, -CO₂-, O₂C, S, CH₂, or a single bond;

Q is selected from (CH₂)_n, n is 1-20 or (CH₂)_m-[Si(L₂)-O]_q-Si(L₂)-(CH₂)_p- where m is 2-20, p is 2-20, q is 1-12 and the L groups are independently of each other selected from CH₃, CF₃, H;

Z is O or CO₂ or O₂C or CH₂ or a single bond;



is a mesogenic group;

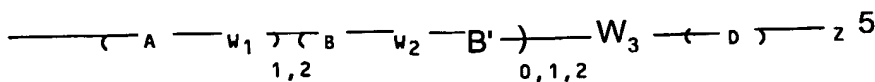
T is 1 or 2 or 3;

when T is 2 then Q may also be selected from $(\text{CH}_2)_g\text{N}((\text{CH}_2)_r)_2$, $(\text{CH}_2)_g\text{Si}(\text{CH}_3)((\text{CH}_2)_r)_2$, $(\text{CH}_2)_g\text{P}((\text{CH}_2)_r)_2$, $(\text{CH}_2)_g\text{Ge}(\text{CH}_3)((\text{CH}_2)_r)_2$, wherein the values of g and r are independently selected from 1-20;

when T is 3 then Q may also be selected from $(\text{CH}_2)_g\text{Si}((\text{CH}_2)_{r'})_3$, and $(\text{CH}_2)_g\text{Ge}((\text{CH}_2)_{r'})_3$; wherein the values of g' and r' are independently selected from 1-20;

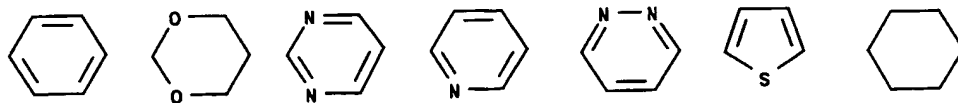
provided that at least one of a,b,c,d,e,f are selected from Formula II.

2. A material according to claim 1 wherein the mesogenic group is given by Formula III:



Formula III

A, B, B' D are selected from the following rings:



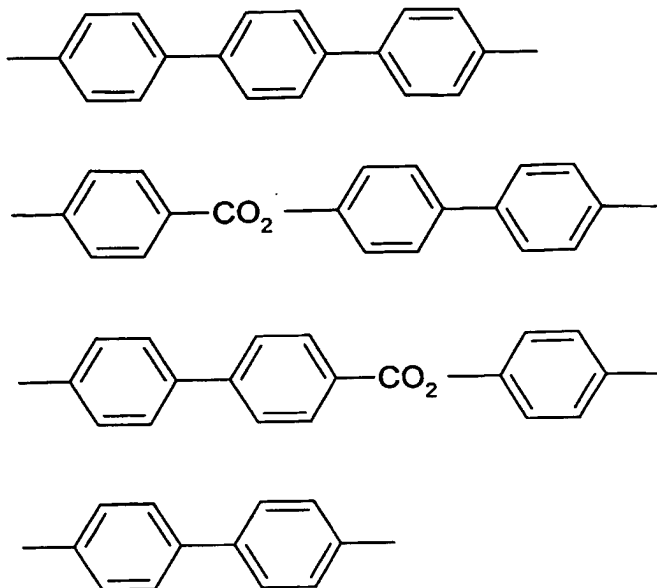
the above rings may be substituted with one or more of the following substituents in at least one of the available substitution positions: F, Cl, Br, CH_3 , CN, OR, R and NCS where R is given by C_{1-16} branched or straight chain alkyl; B' may also be selected from single bond;

Z^5 is selected from CN, F, Cl, NO_2 , R, OR, CO_2R , CF_3 , OOCR, NCS, SCN, where R = straight chain or branched chain alkyl and may include from 1-16 carbon atoms and including where one or more non-adjacent CH_2 groups may be substituted by $CH(CN)$, $CH(CF_3)$, $CH(Cl)$, $CH(CH_3)$ in chiral or non-chiral form and one or more non-adjacent CH_2 groups may be substituted by CH such that there is a double bond present and the terminal CH_3 group may be replaced by a CH_2 group;

provided that the total number of rings present is not greater than 4;

W_1 and W_2 and W_3 are independently selected from COO, OCO, single bond, CH_2CH_2 , CH_2O , OCH_2 , O, S, $CH=CH$, $C\equiv C$, $OCO(CH_2)_x$, $COO(CH_2)_x$ wherein x is 1-4.

3. A material according to claim 1 or 2 wherein the mesogenic group or at least a part of the mesogenic group is given by the cholesteryl group or a derivative of the cholesteryl group.
4. A material according to claim 1 or claim 2 wherein the core of the mesogenic group is chosen from the following:



wherein in each of the mesogenic groups, one or two or three of the phenyl rings may be, independently of each other, replaced by cyclohexyl, pyrimidine or pyridine and the cyclohexyl groups and phenyl groups may independently of each other be substituted in one or two or three positions with F, the CO_2 group may also be replaced with O_2C or $\text{C}\equiv\text{C}$.

5. A liquid crystal mixture comprising any of the compounds of claims 1-4.
6. An electro-optic device comprising any of the materials of claims 1-4 or the mixture of claim 5.
7. A device according to claim 6 wherein the electro-optic device is a liquid crystal device.
8. A device according to either of claims 6 and 7 which is multiplex addressed.
9. A device according to any of claims 6-8 which is addressed by light.